

CLAIMS:

What is claimed is

1. A method of converting an N-bit input in a linear scale to an M-bit output in a logarithmic scale comprising:
 - 5 dividing the input range into a set of K subranges each defined by a number of bits of the N-bit input;
 - converting each of the subranges into a respective output that would be the M-bit output if the most significant set bit in the N-bit input was in the subrange;
 - 10 determining from the N-bit input an indication of which of the subranges to select for an output; and
 - selecting the output of the converting step for the selected output as the M-bit output.
2. A method of converting as recited in claim 1, wherein the subranges are overlapping.
3. A method of converting as recited in claim 2, wherein the converting steps of the subranges occur in parallel.
4. A method of converting as recited in claim 3, wherein the determining step occurs in parallel with the converting steps.
5. A method of converting as recited in claim 2, wherein N is 16 and wherein there are 5-subranges, the four lowest order subranges comprising 5-bits of the input, and the highest 20 subrange including 4 bits of the input.
6. A method of converting as recited in claim 2, wherein the N-bit input is an average power measurement determined from a set of samples received in a radio receiver.
7. A method of converting as recited in claim 6, wherein the M-bit output is for indexing a lookup table to set the gains of the radio receiver.

8. A converter to convert an N-bit input in a linear scale to an M-bit output in a logarithmic scale comprising:
- a set of K converting means each for converting one of K sets of bits of the N-bit input, each set of bits defining a subrange of the N-bit input, each converting means for converting its respective subrange into a respective output that would be the M-bit output if the most significant set bit in the N-bit input was in the subrange;
- indicating means having the N-bit input as an input, the determining means for indicating which of the subranges to select for an output; and
- selecting means connected to the set of determining means, the selecting means for selecting the output of the converting means for the selected output as the M-bit output.
9. A converter as recited in claim 8, wherein the subranges are overlapping.
10. A converter as recited in claim 9, wherein the converting means carry out the converting in parallel.
11. A converter as recited in claim 10, wherein the indicating means indicates in parallel with the converting of the converting means.
12. A converter as recited in claim 9, wherein N is 16 and wherein there are 5-subranges, the four lowest order subranges comprising 5-bits of the input, and the highest subrange including 4 bits of the input.
13. A converter as recited in claim 9, wherein the N-bit input is an average power measurement determined from a set of samples received in a radio receiver.
14. A converter as recited in claim 13, wherein the M-bit output is for indexing a lookup table to set the gains of the radio receiver.
15. A converter to convert an N-bit input in a linear scale to an M-bit output in a logarithmic scale comprising:

a set of K subrange converters each coupled to a respective number of bits of the N-bit input that represents a subrange of the N-bit input, each subrange converter to convert the subrange into a respective output that would be the M-bit output if the most significant set bit in the N-bit input was in the subrange;

5 a range selector having the N-bit input as an input, to indicate which of the subranges to select for an output; and

 a selector having as inputs the outputs of the subrange converters and coupled to the range selector to select the output of one of the subrange converters as the M-bit output.

- 4 10 16. A converter as recited in claim 15, wherein the subranges are overlapping.
- 11 17. A converter as recited in claim 16, wherein the subrange converters carry out the
12 converting in parallel.
- 13 18. A converter as recited in claim 17, wherein the range selector indicates in parallel with
14 the converting of the subrange converters.
- 15 19. A converter as recited in claim 16, wherein N is 16 and wherein there are 5-subranges,
16 the four lowest order subranges comprising 5-bits of the input, and the highest subrange
17 including 4 bits of the input.
- 20 20. A converter as recited in claim 16, wherein the N-bit input is an average power
21 measurement determined from a set of samples received in a radio receiver.
- 20 21. A converter as recited in claim 20, wherein the M-bit output is for indexing a lookup
21 table to set the gains of the radio receiver.